



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,389	05/24/2007	Shingo Okamoto	060659	9276
23850 7590 08/17/2010 KRATZ, QUINTOS & HANSON, LLP 1420 K Street, N.W. 4th Floor WASHINGTON, DC 20005			EXAMINER MOWLA, GOLAM	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 08/17/2010	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/594,389	<b>Applicant(s)</b> OKAMOTO ET AL.	
	<b>Examiner</b> GOLAM MOWLA	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 6-8, 11 and 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 9, 10 and 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>09/27/2006 and 02/08/2008</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of Species A (directed to embodiments 1 and 2) in the reply filed on 06/04/2010 is acknowledged. The election has been treated as an election **without traverse** because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement (MPEP § 818.03(a)).
2. Claims 6-8 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species B, there being no allowable generic or linking claim.
3. Claims 11 and 12 are directed to Species B directed to embodiment 3 in which the heat release means in a conveyance belt (pages 28-29 of Applicant's specification). Although Examiner did not explicitly mention in the "Election/Restrictions" dated 05/26/2010 that claims 11 and 12 appears to read on Species B, Applicant had the burden to identify the claims readable on the elected species ("The reply must also identify the claims readable on the elected species, including any claims subsequently added", see page 1 of "Election/Restrictions" dated 05/26/2010). Thus, claims 11 and 12 are also withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species B, there being no allowable generic or linking claim.

### *Drawings*

4. Figure 9 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR

Art Unit: 1795

1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-5 and 9-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the surfaces" in line 3. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 and 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by

Applicant's Admitted Prior Art (hereafter "AAPA").

Art Unit: 1795

Regarding claim 1, AAPA discloses a method of manufacturing a solar battery (solar battery string 100) (fig. 9) (“Background of the Invention” section of Applicant’s Specification, P1/L5-P2/L18) by electrically connecting a plurality of cells (12) to one another using connection members (tab 14), comprising:

- a flux applying step (second step) (fig. 9) of applying a flux to the surfaces of the cells (12);
- a disposing step (third step) (fig. 9) of disposing the connection members (14) over the adjacent cells (12) to which the flux has been applied;
- a string step (fourth step or tab string step) (fig. 9) of connecting the connection members (14) to the cells (12) by soldering (P1/L25-P2/L7); and
- a cell heating step (cleaning step which includes “steaming” to remove the flux and all other residues) of heating the cells (12) connected to the connection members (14) (P2/L13-L18 and P3/L14-17).

Regarding claim 9, AAPA further discloses that the whole cells (12) are heated in the cell heating step (steaming step) (P1/L5-P2/L18).

Regarding claim 10, AAPA further discloses that the cell heating step includes: heat release means for preventing a solder which connects the connection members (14) to the cells (12) from being molten (P1/L5-P2/L18).

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1795

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA as applied to claim 1 above.

Regarding claims 2-5, Applicant is directed above for complete discussion of AAPA with respect to claim 1, which is incorporated herein.

Art Unit: 1795

However, AAPA does not explicitly disclose whether a heating temperature of the cell heating step (steaming step) is not less than a boiling or activating temperature of the flux, and whether the heating temperature is 150°C and the heating time is three minutes.

It would have been obvious to one skilled in the art at the time of the invention to have determined the optimum temperature of steaming step and optimum time for steaming step (cleaning step) through routine experimentation such that the surfaces of the cells (12) are cleaned, as desired by AAPA (P2/L13-18). In addition, in the case where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (MPEP § 2144.05 IIA, *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)).

13. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA as applied to claim 1 above, and further in view of Gonsiorawski et al. (US 5,074,920) and Tanaka et al. (JP 2003-168811, refer to translation provided by the applicant).

Applicant is directed above for complete discussion of AAPA with respect to claim 1, which is incorporated herein. However, the reference is silent as to whether in the string step, hot air is blown against the connection members to perform the soldering, and in the cell heating step, the cells are irradiated with an infrared ray to heat.

It is well known in the solar or photovoltaic art to blow hot air against the tabbing/connection member to perform soldering effectively, as taught by Gonsiorawski (see example 1).

Art Unit: 1795

Therefore, it would have been obvious to one skilled in the art at the time of the invention to blow hot air against the tabbing/connection member to perform soldering as taught by Gonsiorawski in the method of AAPA such that the connection member is soldered effectively to the surface of the solar cell.

Tanaka discloses a solar battery (figs. 2-3) by electrically connecting a plurality of cells (photovoltaic cell 1) to one another using connection members (tab lead 4). Tanaka further teaches that the cells (1) the use of infrared heater (9) which irradiates infrared rays in order to efficiently solder the connection member (4) to the photovoltaic cell (1) (abstract and [0008-0009]).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to use the IR heater of Tanaka in the method of AAPA in order to efficiently solder the connection member to the photovoltaic cell, as taught by Tanaka.

### ***Double Patenting***

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re*



Art Unit: 1795

*Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

15. Claims 1-5, 9-10 and 13 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-22 of U.S. Patent No. 7,754,962 B2 in view of AAPA.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims 1-22 of U.S. Patent No. 7,754,962 B2 encompass all the limitations of instant claims 1-5, 9-10 and 13 except that U.S. Patent No. 7,754,962 B2 does not claim whether a flux has been applied to the surface of the cells.

Art Unit: 1795

However, it is well known in the solar or photovoltaic art to apply a flux on the surfaces of the solar cells to clean the surface as taught by AAPA (fig. 9) (“Background of the Invention” section of Applicant’s Specification, P1/L5-P2/L18)

Therefore, it would have been obvious to one skilled in the art at the time of the invention to have claimed a flux applying step as taught by AAPA in the method of the claims 1-22 of U.S. Patent No. 7,754,962 B2 such that the surface of the cells are cleaned before applying connection member, as taught by AAPA.

#### ***Correspondence/Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GOLAM MOWLA whose telephone number is (571) 270-5268. The examiner can normally be reached on M-Th, 0800-1830 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, ALEXA NECKEL can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

Art Unit: 1795

like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/G. M./

Examiner, Art Unit 1795

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795